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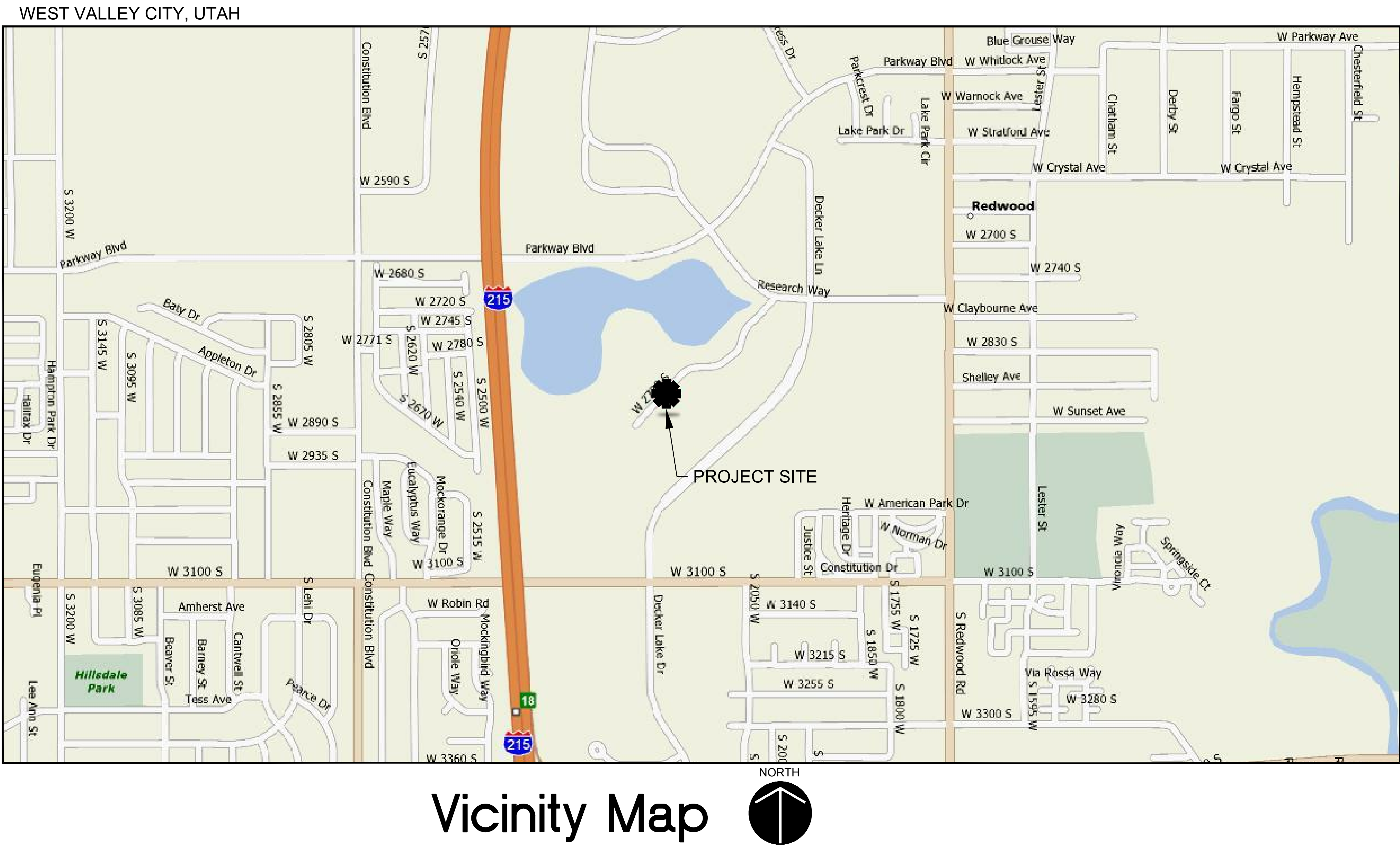
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CHILLER REPLACEMENT – DECKER LAKE YOUTH CENTER (BLDG. 02217)

Department of Human Service
2310 West 2770 South West Valley City, Utah 84119



DFCM Project No. 09124430 CONSTRUCTION DRAWINGS



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M6.1	MECHANICAL SCHEDULES, DETAILS SYMBOLS & ABBREVIATIONS
E1.1	ELECTRICAL POWER PLAN

CONSULTANTS

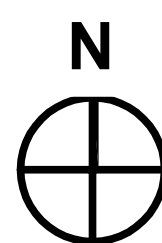
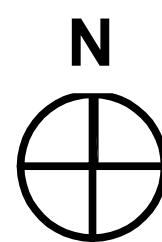
PROJECT ENGINEER:	VAN BOERUM & FRANK ASSOCIATES, INC. 330 SOUTH 300 EAST SALT LAKE CITY, UT 84111 (801) 530-3148 (Steve Shepherd)
ELECTRICAL ENGINEER:	VAN BOERUM & FRANK ASSOCIATES, INC. 330 SOUTH 300 EAST SALT LAKE CITY, UT 84111 (801) 530-3148 (Stan Johns)



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• Van Boerum & Frank Assoc., 2008

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REVISIONS	
VBFA PROJECT #:	09171
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COVER SHEET	



- ## M1.1

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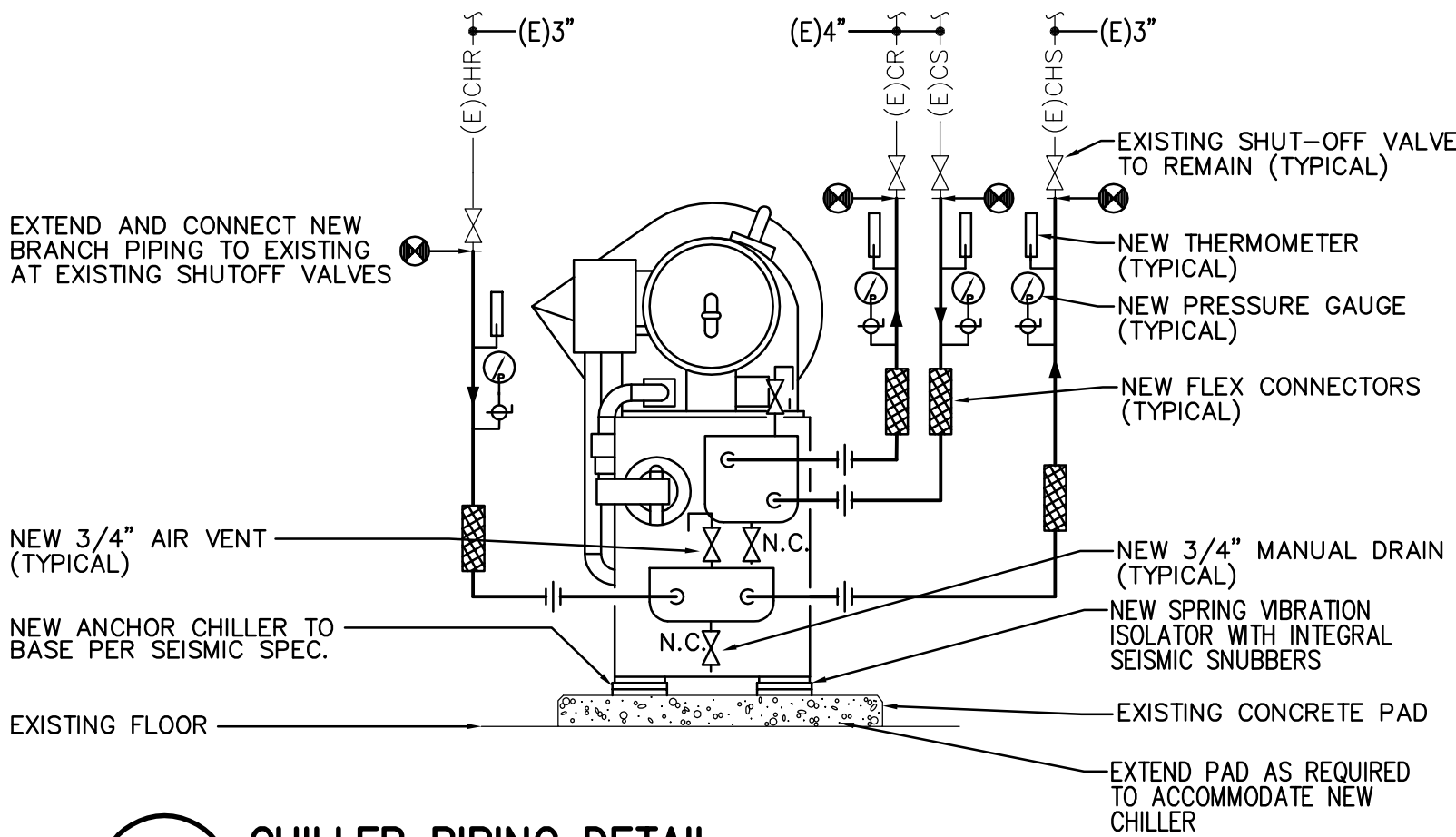
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CLOSED CIRCUIT COOLING TOWER SCHEDULE																		
										FLUID				ELECTRICAL				
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	CAPACITY (BTUH)	FAN AIRFLOW (CFM)	AMBIENT TEMP. DB/WB (°F)	FLOW RATE (GPM)	ENTERING/ LEAVING TEMP. (°F)	WORKING FLUID	PRESSURE DROP THROUGH COILS (FT)	MOTOR QUAN.	FAN MOTOR SIZE (HP)	FAN MOTOR SPEED (RPM)	PUMP MOTOR SIZE (HP)	TOWER AND PUMP VOLT/PHHZ	OPERATING WEIGHT (LB)	LENGTH/ WIDTH/ HEIGHT (IN)	NOTES
CT-1	EVAPCO ATWB 9-5H8-Z	OUTDOOR	CLOSED CIRCUIT	1,543,479	31,470	95 / 67	187.0	96 / 80	WATER	2.8	1	7.5	1750	2	208/3/60	13,150	102 / 90 / 143	1, 2
1. CLOSED CIRCUIT COOLING TOWER, SERIES FLOW OPERATION, VIBRATION SWITCH, ALUMINUM LADDER, CONTACTOR WITH DISCONNECT FOR HEATER PACKAGE AND FUSED DISCONNECT.																		
2. 7 KW SUMP HEATER WITH HEATER CONTROL PANEL																		

WATER-COOLED CHILLER SCHEDULE																		
						EVAPORATOR				CONDENSER				ELECTRICAL				
ID	MANUFACTURER AND MODEL NUMBER	LOCATION	TYPE	REFRIG.	LOAD (TONS)	FLOW RATE (GPM)	ENTERING/ LEAVING TEMP. (°F)	WORKING FLUID	MAX HEAD LOSS (FT)	FLOW RATE (GPM)	ENTERING/ LEAVING TEMP. (°F)	WORKING FLUID	MAX HEAD LOSS (FT)	MAXIMUM KW	TOTAL MCA	EER	CHILLER VOLT/PHHZ	MAX LENGTH/ WIDTH/ HEIGHT (IN)
CH-1	MCQUAY WG2090	CHILLER RM	NOTE 1	R-410A	81.0	145.8	55.0 / 41.0	30% PG	6.2	187	80.0 / 93.0	WATER	4.4	59.7	348	16.3	208/3/60	150 / 35 / 66
1. WATER COOLED SCROLL COMPRESSOR PACKAGED CHILLER, MULTIPLE COMPRESSOR AND MINIMUM 2 REFRIGERANT CIRCUITS																		
2. CAPACITIES AT 4300 FEET ELEVATION																		
3. SINGLE POINT POWER CONNECTION																		
4. UNIT TO COME WITH STARTER AND FACTORY MOUNTED DISCONNECT SWITCH																		
5. ALTERNATE CHILLER TYPE: MODULAR CHILLER MAY BE USED AS AN ALTERNATE TO SCHEDULED CHILLER. ALTERNATE MUST MEET ALL CAPACITIES, FLOWS, TEMPERATURES, ETC																		
PROVIDE ANY ADDITIONAL VALVES, FLOW SETTERS, ELECTRICAL DISCONNECTS AND CONNECTIONS FOR MODULAR CHILLER FOR A COMPLETE AND WORKING INSTALLATION. SEE SPECIFICATIONS																		

- NOTE:
1. ARRANGE PIPING TO FACILITATE TUBE SERVICE SPACE.
 2. PIPE REFRIGERANT RELIEF TO OUTSIDE, FULL SIZE.
 3. PIPE OIL COOLER AS REQUIRED BY MANUFACTURER, TO CHILLED WATER SUPPLY AND RETURN.



C6 CHILLER PIPING DETAIL
M6.1 NO SCALE

LEGEND OF MECHANICAL SYMBOLS AND ABBREVIATIONS

PLUMBING

	ARROW INDICATES DIRECTION OF FLOW IN PIPE
	CHECK VALVE
	SHUT-OFF VALVE
	GATE VALVE - NON RISING STEM
	GLOBE VALVE
	TEMPERATURE AND PRESSURE TEST PORT
	PRESSURE SWITCH
	CALIBRATED BALANCING VALVE WITH GPM INDICATED
	BRANCH - BOTTOM CONNECTION
	BRANCH - TOP CONNECTION
	BRANCH - SIDE CONNECTION
	RISE OR DROP
	RISER - DOWN (ELBOW)
	RISER - DOWN (ELBOW)
	FLOW METER
	UNION
	FLEXIBLE EXPANSION JOINT
	THERMOMETER - TEMP RANGE AS INDICATED
	PRESSURE GAUGE WITH SHUT-OFF COCK

PLUMBING

	PRESSURE GAUGE WITH PIGTAIL
	LATERAL STRAINER WITH BLOW-OFF VALVE, PROVIDE HOSE END WITH CAP WHERE DISCHARGE IS NOT PIPED TO DRAIN
	BALL VALVE (PIPE SIZES 2" AND SMALLER)
	BUTTERFLY VALVE (PIPE SIZES 2-1/2" AND LARGER)
	MOTOR OPERATED BUTTERFLY VALVE
	VALVE IN RISE
	AIR VENT-MANUAL
	AIR VENT-AUTO
	FLOW SWITCH
	REDUCER
	CONCENTRIC REDUCER
	ECCENTRIC REDUCER
	SWITCH
	SENSOR
	FLANGE
	90° ELBOW
	45° ELBOW
	STEAM TRAP, F&T=FLOAT & THERMOSTATIC
	LEADER INDICATES DOWNWARD SLOPE
	DEMOLITION

SYMBOLS

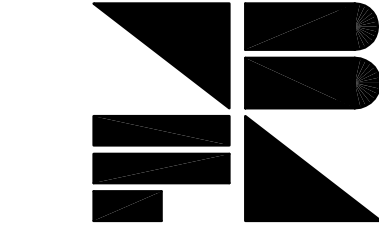
	POINT OF CONNECTION
	SECTION TAG - TOP FIGURE IS SECTION NO. BOTTOM FIGURE IS SHEET NO.
	DETAIL TAG - TOP FIGURE IS DETAIL NO. BOTTOM FIGURE IS SHEET NO.
	EQUIPMENT IDENTIFICATION
	KEYED NOTE IDENTIFICATION

LINETYPES

	CHILLED WATER SUPPLY
	CHILLED WATER RETURN
	EXISTING PIPING
	EXISTING PIPING TO BE REMOVED

MECH. GENERAL NOTES

1. DO NOT ROUTE DUCTS AND PIPES ABOVE ELECTRICAL PANELS. ALL ELECTRICAL PANELS MUST HAVE CLEAR ACCESS SPACE IN FRONT OF PANEL 4'-0" DEEP AND 6'-6" HIGH. DO NOT ROUTE DUCTS AND PIPES IN ELECTRICAL ROOMS, EXCEPT DUCTS AND PIPES SERVING THE ROOM.
2. IF CONTRACTOR ENCOUNTERS MATERIAL WHICH MAY CONTAIN ASBESTOS IMMEDIATELY STOP WORK IN THIS AREA AND NOTIFY THE OWNER.
3. ALL DEMOLISHED AND NEW EQUIPMENT SHALL BE BROUGHT IN THROUGH EXISTING DOORS AND OPENINGS. IF FURTHER OPENINGS OR MEANS AND METHODS ARE NEEDED TO BRING IN AND INSTALL EQUIPMENT, CONTRACTOR SHALL PROVIDE SUCH OPENINGS, MEANS AND METHODS AND REPAIR ANY DAMAGE OR OPENINGS.



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VBFA PROJECT #: 09171
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DRAWN BY: Ejuarez
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SCHEDULES,
DETAILS, SYMBOLS
& ABBREVIATIONS

M6.1

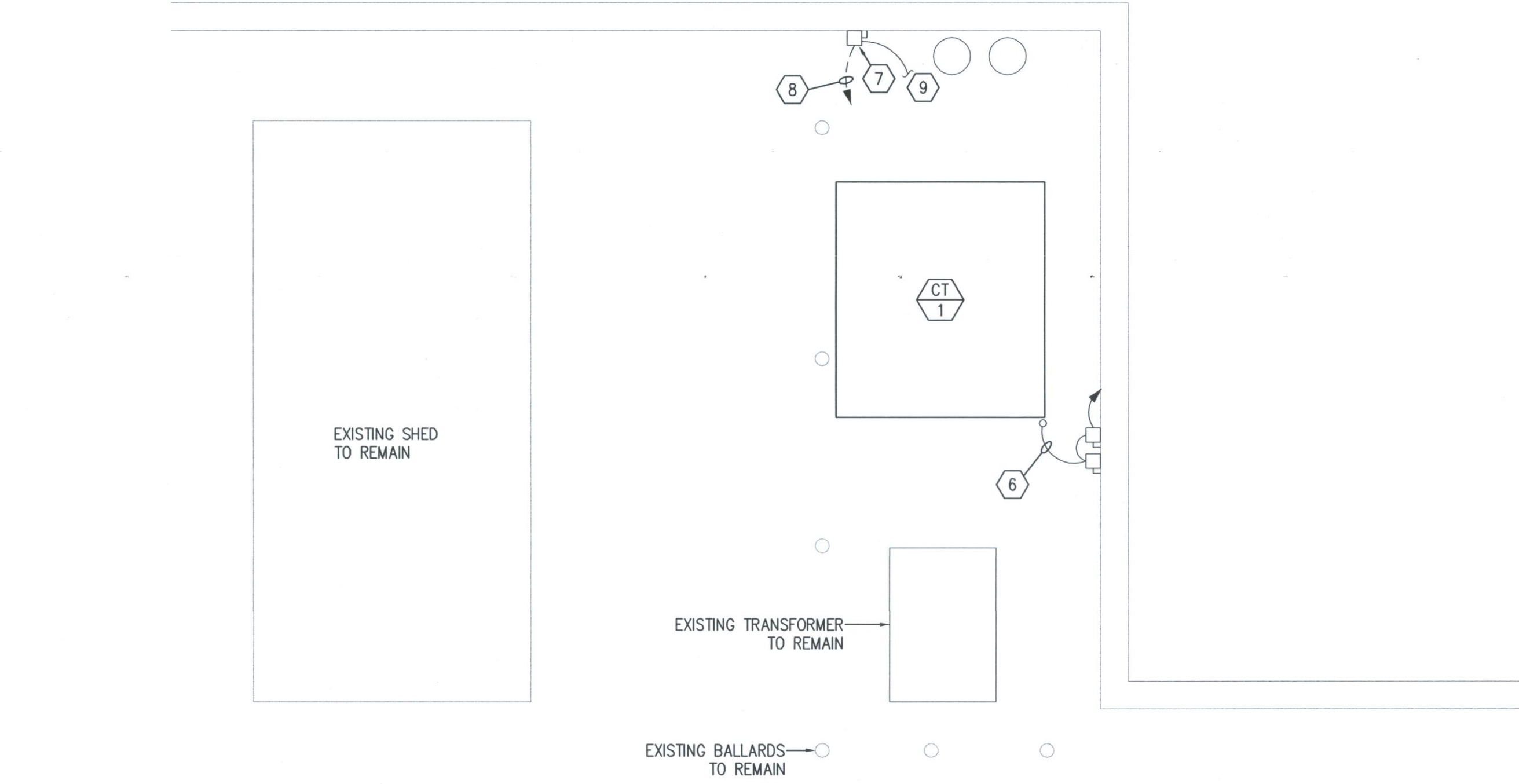
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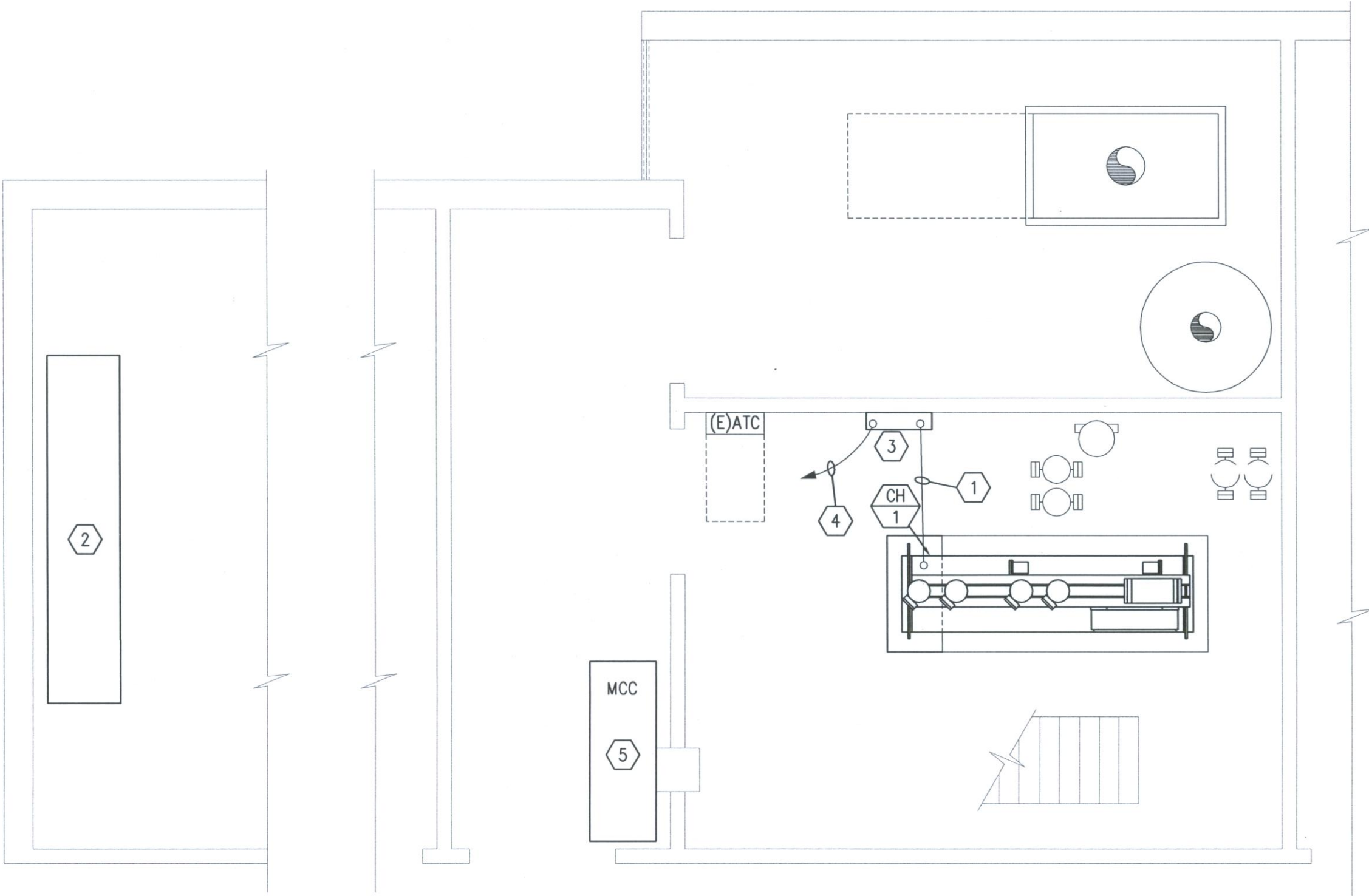
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1 COOLING TOWER POWER PLAN
SCALE: 1/4" = 1'-0"



2 CHILLER POWER PLAN
SCALE: 1/4" = 1'-0"

ELECTRICAL SYMBOL SCHEDULE		
SYMBOL	DEVICE/FIXTURE DESCRIPTION	NOTES
	DISCONNECT SWITCH	
	WIRING IN CND IN CEILING OR WALL	
	CONDUIT TURNED UP	
	CIRCUIT HOME RUN TO PANEL	3 CONDUCTORS INCLUDING THE EQUIPMENT GROUND CONDUCTOR.
	CIRCUIT HOME RUN TO PANEL	NUMBER OF ARROW HEADS INDICATE NUMBER OF CIRCUITS. SLASH MARKS INDICATE NUMBER OF CONDUCTORS. EX. TWO CIRCUITS, FOUR CONDUCTORS, COMMON NEUTRAL AND THREE CIRCUITS WITH 7 CONDUCTORS (SEPARATE NEUTRAL PER CIRCUIT). BOTH EX. INCLUDE AN EQUIP. GROUND.
	WIRING IN CND IN GROUND OR FLOOR	
	CONDUIT TURNED DOWN	
INSTALL CONDUIT AS DRAWN ON THE PLANS. THE ONLY EXCEPTIONS ARE THOSE AUTHORIZED IN WRITING BY THE ENGINEER. ALL CONDUITS SHALL INCLUDE AN EQUIPMENT GROUND CONDUCTOR SIZED PER NEC.		
NOTES/ABBREVIATIONS		
AFG - ABOVE FINISHED GRADE, AFF - ABOVE FINISHED FLOOR, BFG - BELOW FINISHED GRADE, BC - BARE COPPER, AIC - AMPS INTERRUPTING CAPACITY, BFG - BELOW FINISHED GRADE, CND, OR C - CONDUIT, CT - CURRENT TRANSFORMER, GC - GENERAL CONTRACTOR, EC - ELECTRICAL CONTRACTOR, DFA - DROP FROM ABOVE, EV - ELECTRO VOICE, MCA - MINIMUM CIRCUIT AMPS, MC - MECHANICAL CONTRACTOR, POS - POINT OF SALES, POC - POINT OF CONNECTION, P.C. - PLUMBING CONTRACTOR, SCA - SHORT CIRCUIT AMPERES, RMC - RIGID METAL CONDUIT, VF - VERIFY IN FIELD, VA - VOLT/AMPS, TC - TEMP. CONTROL CONDUIT, WP - WEATHER PROOF/NEMA 3R		

KEYED NOTES

- EC SHALL DISCONNECT CONDUCTORS AND CONDUITS FROM EXISTING CHILLER IN PREPARATION FOR THE MC TO REPLACE IT. PROVIDE A FEEDER FROM THE 600 AMP CHILLER DISCONNECT CONSISTING OF A 3" CONDUIT WITH 3/600 Kcmil + 1/8" GROUND CONDUCTORS TO THE NEW CHILLER UNIT. CONFIRM CONNECTION REQUIREMENTS WITH THE MC PRIOR TO ROUGH-IN.
- EXISTING MAIN SWITCHBOARD, SQUARE D POWER STYLE, TO REMAIN. EC SHALL REPLACE THE EXISTING BREAKER FEEDING THE CHILLER DISCONNECT WITH A SQUARE D, 400 AMP, TYPE IAS6400 BREAKER. RETURN THE EXISTING 225 AMP BREAKER TO THE OWNER.
- EXISTING 600 AMP FUSED DISCONNECT. EC SHALL PROVIDE A FULL SERVICE OF THE DISCONNECT AS RECOMMENDED BY THE MANUFACTURER. EC SHALL RECONDITION ALL FUSE AND CABLE CONNECTIONS TO LIKE NEW CONDITION. EC SHALL TORQUE ALL ELECTRICAL CONNECTIONS TO VALUES REQUIRED BY THE MANUFACTURER. EC SHALL PROVIDE NEW 400 AMP CLASS RK5 DUAL-ELEMENT TIME-DELAY FUSES. REMOVE AND RETURN THE EXISTING 350 AMP FUSES TO THE OWNER. FIELD CONFIRM EXISTING CONDITIONS.
- PROVIDE A FEEDER FROM THE 400 AMP BREAKER IN THE MAIN SWITCHBOARD TO THE CHILLER DISCONNECT CONSISTING OF A 3" CONDUIT WITH 3/600 Kcmil + 1/8" GROUND CONDUCTORS.
- EXISTING SQUARE D MODEL 4 MOTOR CONTROL CENTER (MCC) TO REMAIN. EC SHALL REMOVE THE EXISTING BUCK FEEDING THE COOLING TOWER AND GIVE IT TO THE OWNER. PROVIDE A NEW CIRCUIT BREAKER BUCKET SQUARE D 8998-BW452 WITH A FILLER PLATE SIZED AS REQUIRED FILL THE ENTIRE SPACE LEFT BY REMOVING THE EXISTING BUCKET.
- EC SHALL REMOVE THE EXISTING CONDUIT AND CONDUCTORS FROM THE STARTER TO THE SUMP PUMP ON THE EXISTING COOLING TOWER. PLUG THE KNOCK-OUTS ON THE STARTER AND LEAVE IT ON THE WALL WHERE IT IS.
- REPLACE THE EXISTING 100 AMP NON-FUSED DISCONNECT WITH A NEW 100 AMP NON-FUSED DISCONNECT SQUARE D 3130-DU323RB.
- EXISTING CONDUIT AND CONDUCTORS FROM MCC TO REMAIN AND BE REUSED.
- EC SHALL REUSE THE EXISTING CONDUIT WITH NEW 4/0+1/8" GROUND CONDUCTORS OR PROVIDE A NEW 1 1/4" RIGID STEEL CONDUIT ON UNISTRUT MOUNTS WITH 4/0+1/8" GROUND CONDUCTOR FROM THE NEW DISCONNECT TO THE NEW COOLING TOWER AND MAKE CONNECTION TO IT. USE THE EXISTING CONDUIT IF IT COMES OUT OF THE GROUND IN THE CORRECT LOCATION TO CONNECT TO THE NEW TOWER. IT MAY NEED TO BE CUT OFF FLUSH WITH THE CONCRETE IF IT IS IN THE WAY. CONFIRM REQUIREMENTS WITH THE MC PRIOR TO ROUGH-IN.

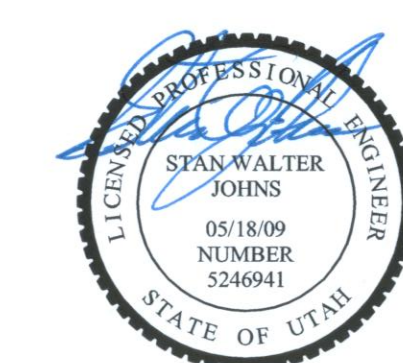
GENERAL NOTES

- THE ELECTRICAL SYSTEMS DEFINED BY THESE PLANS AND SPECIFICATIONS ARE TO BE CONSTRUCTED AS COMPLETE AND OPERABLE SYSTEMS AND SHALL BE BID WITH THIS INTENT. THE CONTRACTOR SHALL VISIT THE SITE, READ ALL THE RELEVANT DOCUMENTS AND BECOME FAMILIAR WITH THE TYPE OF CONSTRUCTION AND WORK TO BE ACCOMPLISHED. SHOULD ANY ERROR, OMISSION OR CONFLICT EXIST IN EITHER THE PLANS OR SPECIFICATIONS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER IN WRITING BEFORE SUBMITTING HIS BID PRICE SO A CHANGE CAN BE ISSUED IN A PRE-BID ADDENDUM. OTHERWISE, THE CONTRACTOR AND/OR EQUIPMENT SUPPLIER SHALL SUPPLY THE PROPER MATERIALS AND LABOR TO INSTALL COMPLETE AND OPERABLE SYSTEMS AT THEIR OWN EXPENSE. WHEN EACH ELECTRICAL SYSTEM IS COMPLETE, THE CONTRACTOR SHALL TEST AND CONFIRM ITS PROPER OPERATION. ANY INCOMPLETE SYSTEM SHALL BE MADE COMPLETE AND OPERABLE.
- THE ARCHITECTURAL AND MECHANICAL PLANS ARE CONSIDERED A PART OF THE ELECTRICAL DOCUMENTS SO FAR AS THEY APPLY. THE ELECTRICAL CONTRACTOR SHALL REFER TO AND COORDINATE WITH THEM. NO EXTRA COST SHALL BE ALLOWED FOR FAILURE TO COORDINATE THE CONTRACT DOCUMENTS WITH OTHER TRADES AND/OR IF EQUIPMENT DIMENSIONS ARE GREATER THAN SPECIFIED AND/OR DIMENSIONED ON THE PLANS.
- NO ADDITIONS TO THE CONTRACTOR BID WILL BE ALLOWED FOR CHANGES MADE NECESSARY BY INTERFERENCE WITH OTHER WORK.
- THE ELECTRICAL CONTRACTOR SHALL PROVIDE EQUIPMENT, MATERIALS AND LABOR FOR THE CONNECTIONS OF ALL EQUIPMENT SHOWN ON THE PLANS - ARCHITECTURAL, MECHANICAL, ETC.
- THIS PROJECT IS TO BE INSTALLED IN STRICT ACCORDANCE WITH LOCAL AND STATE CODES AND THE NEC. IF AT ANY TIME DURING CONSTRUCTION, OR AFTER, SOMETHING IS FOUND TO BE INSTALLED IN VIOLATION OF THE CODES LISTED ABOVE, IT SHALL BE CORRECTED AT THE CONTRACTORS EXPENSE.
- THE EC SHALL INSTALL A SEPARATE EQUIPMENT GROUNDING CONDUCTOR IN EACH CONDUIT RUN. CONDUIT SHALL NOT BE USED AS AN EQUIPMENT GROUNDING CONDUCTOR. THE EC SHALL GROUND THE ELECTRICAL SYSTEM IN ACCORDANCE WITH LOCAL AND NATIONAL CODES.
- ELECTRICAL CONTRACTOR SHALL CONFIRM MINIMUM CODE (NEC) WORKING CLEARANCE BEFORE INSTALLING ANY ELECTRICAL PANELS OR CABINETS AND SHALL MOVE THE PANELS AT HIS EXPENSE IF REJECTED BY AN INSPECTOR. IF CLEARANCE IS NOT POSSIBLE, THE DESIGNER SHALL BE NOTIFIED IMMEDIATELY IN WRITING.
- THE ELECTRICAL CONTRACTOR SHALL SECURE ALL CONDUIT TO THE STRUCTURE AS IT IS SET IN PLACE USING INDUSTRY STANDARD METHODS AND PRACTICES.
- TO ASSURE ALL DEVICES ARE PROUDLY SET, THE ELECTRICAL CONTRACTOR SHALL SECURE ALL DEVICE BOXES WITH BRACKETS, HANGERS, ETC. DESIGNED FOR THE APPLICATION. ANY DEVICE BOXES NOT SECURED WILL BE MADE SECURE AT THE CONTRACTORS EXPENSE.
- LENGTHS OF FLEXIBLE CONDUIT GREATER THAN 48 INCHES SHALL NOT BE INSTALLED ON THIS PROJECT.
- DURING CONSTRUCTION, THE ELECTRICAL CONTRACTOR SHALL REMOVE, REROUTE, AND/OR RELOCATE ANY EXISTING ELECTRICAL EQUIPMENT THAT CONFLICTS WITH THE REMODEL OR ADDITION. ALL SYSTEMS SHALL BE OPERABLE AT THE COMPLETION OF THE PROJECT. EQUIPMENT THAT IS NOT REUSED AND NOT WANTED BY OWNER BECOMES THE PROPERTY OF THE ELECTRICAL CONTRACTOR AND SHALL BE REMOVED FROM THE PREMISES.
- THE ELECTRICAL CONTRACTOR SHALL MAINTAIN ELECTRICAL CONTINUITY TO REMAINING EQUIPMENT WHEN ANY EXISTING ELECTRICAL EQUIPMENT IS REMOVED.



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